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Rocky Flats, Colorado, Site Wetland Mitigation Monitoring and Management Plan

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Wetland Mitigation Monitoring and Management Plan

1.1 Purpose

The Rocky Flats Wetland Mitigation Monitoring and Management Plan has been developed to outline a strategy to determine whether wetland mitigation efforts at Rocky Flats have successfully mitigated for wetland impacts resulting from cleanup and closure activities.

1.2 Wetland Monitoring Plan

The following wetland monitoring methodology is provided as guidance to evaluate the success of the restored or created mitigation wetlands at Rocky Flats. Approximately 7.7 acres of wetlands were affected by site cleanup and closure activities at Rocky Flats. The overall performance objective is to re-establish a minimum of 7.7 acres of wetlands to mitigate and replace those that were affected by closure activities. Additional wetlands that develop on-site (above and beyond the mitigation needed) are an added bonus for water quality and wildlife habitat at the Rocky Flats Site (Site). Both in-situ wetland re-establishment and additional creation of wetlands was conducted at the Site to mitigate for these impacts. Current estimates suggest that approximately 10 to 11 acres of wetlands may develop as a result of land configuration activities at the Site. Rather than evaluate wetland mitigation on a project-by-project basis, a site-wide approach is being taken because of the limitations faced at various project locations. Additionally, from an ecological and wildlife standpoint, the issue of specific project locations is inconsequential compared to the overall quality and abundance of wetlands at the Site.

Interim monitoring during the first four years after planting will provide information for the management and establishment of these wetlands (i.e., vegetation establishment, reseeding, weed control). In the fifth year after planting, the mitigation wetlands will be delineated following the accepted U.S. Army Corps of Engineers wetland delineation manual methods (USACOE 1987). The total number of acres of created wetland types will be determined and compared to pre-disturbance wetland amounts. The goal is that at a minimum, the amount of created/re-established wetlands will equal that impacted by closure activities. If the total amount of wetlands re-established in-situ or created at Rocky Flats exceeds the number of wetland acres impacted by closure activities, the additional wetlands on-site will provide an added bonus for water quality and wildlife habitat at the Rocky Flats National Wildlife Refuge. Monitoring will be conducted by the U.S. Department of Energy or its designee.

During years one through four, the interim monitoring/management issues will revolve around the successful establishment of wetland vegetation and control of noxious weeds. (NOTE: Noxious/invasive weeds are defined as those listed by the State of Colorado on the current State Noxious Weed List as provided by the Colorado Noxious Weed Act.) Therefore, the following questions/issues will be evaluated to provide useful management information:

- What wetland types are present (e.g., open water, emergent, scrub-shrub, forested)?
- Estimates of the percent of the ground that is vegetated and the percent of the vegetated area that contains wetland species.

- What are the dominant plant species present at each wetland in each wetland type? What is the estimated cover of each species?
- List of the prevalent plant species.
- Are the desired wetland species establishing? Are there any issues regarding the establishment of the desired wetland species?
- Are the hydrologic conditions appropriate for successful establishment and sustainability of the wetland?
- Are noxious weeds present in the wetlands? If so, what species are present? Estimate the overall abundance of each noxious weed species in the wetland.
- What specific management actions are suggested, if any? What management actions have been conducted, if any?

As needed, photographs, maps, or other diagrams may be used to illustrate annual conditions of the wetlands. The interim wetland monitoring methodology and schedule is listed in Table 1.

Table 1. Wetland Monitoring Methodology and Schedule

Methodology	Schedule
Photographs, Maps, Diagrams (as needed)	Annually
Interim Qualitative Wetland Assessments	Annually
Noxious Weed Evaluations	Monthly (June–August)
Wetland Delineation and Mapping	5 years after project completion

During years one through four, interim qualitative wetland assessments will be made to evaluate the successful establishment of desirable wetland species, noxious weed problems, and hydrologic conditions at selected wetland mitigation locations at Rocky Flats. These assessments will be conducted annually at the height of the growing season. Photographs will be taken from the same locations annually to document the status of the wetland. Semi-quantitative methods (e.g., weed mapping, vegetation mapping, quadrats, etc.) may be used to collect information during the initial years of wetland development. Wetland acreage calculations will be made annually to evaluate the progress of wetland development. In addition to the annual interim qualitative assessments, monthly noxious weed evaluations will be conducted at each of the wetland mitigation areas from June through August each year. A monthly weed evaluation will allow early detection of potential noxious weed problems that will help to control and manage noxious weed issues.

During the fifth year after project completion, a wetland delineation and mapping effort will be conducted to determine the type and extent of the wetlands. Wetland delineations typically involve characterizing and determining whether hydrophytic vegetation, hydric soils, and wetland hydrology exist at a location. The wetland delineation method will follow that approved and used by the regulatory agencies. The current approved wetland delineation methods are those found in the *1987 U.S. Army Corps of Engineers Wetlands Delineation Manual* on-line edition (Technical Report Y-87-1; USACOE 1987).

An annual report will be prepared by March 1 of the following calendar year to summarize the data collected during the previous field season. The report will include summaries of vegetation

data collected, noxious weed issues, management issues, and what, if any, management or corrective actions were taken during the previous calendar year or are planned for the future. The annual report for the fifth year will contain the wetland delineation data and will serve as the final wetland mitigation report (unless further monitoring is required by the regulatory agencies).

1.3 Wetland Maintenance/Management Plan

Maintenance and management of restored wetlands is important for long-term success and sustainability of wetland areas and therefore the effective mitigation of wetland impacts. The following maintenance/management guidance is provided to improve the chances of success for restored and created wetlands at Rocky Flats. If monitoring data show maintenance or corrective actions are necessary, corrective actions will be taken as soon as appropriate and/or possible. The maintenance/management plan includes evaluations on the following:

- Hydrologic conditions
- Inspection of water control structures (where applicable)
- Plant replacement/reseeding
- Weed control
- Erosion control

1.4 Hydrologic Conditions

Water availability and timing of water is critical to wetland establishment and sustainability. The key issues with hydrology are to make sure water is present in the wetlands at the appropriate depths and during the times it is needed for growth of the desired species. The Rocky Flats Pond Operations Plan (RFPOP) addresses hydrologic conditions with respect to pond management and operations. It should be recognized however, that the primary responsibility and objective of the FRPOP is to ensure water quality and dam safety. Therefore, the issue of hydrologic conditions for wetlands is of secondary nature at these locations.

1.4.1 Inspection of Water Control Structures

The inspections of the ponds and water control structures associated with the ponds are addressed in the RFPOP.

1.4.2 Plant Replacement/Reseeding

Often due to a variety of reasons, seedings and plantings of wetland species may fail. Based on the qualitative wetland assessments, the success of the revegetation will be evaluated. Professional judgment based on the results of the assessments will be used to determine whether areas should be replanted/reseeded.

1.4.3 Weed Control

Uncontrolled noxious weeds have the potential to choke out desired vegetation. Additionally, the Colorado Noxious Weed Act requires landowners to control noxious weeds on their properties. Based on the results of the qualitative wetland assessments and weed evaluations, appropriate

weed control efforts will be developed and implemented using an integrated weed management approach, which utilizes administrative, mechanical, biological, and chemical control methods as needed. The vegetation management actions (i.e., weed control) will be developed as part of the larger site-wide vegetation management plans. Herbicide applications will be based on professional judgment in consultation with a licensed commercial applicator following the manufacturer's label instructions and recommendations. Noxious weed species cover must be less than 10 percent of the total wetland area in the third growing season in the wetland mitigation areas.

1.4.4 Erosion Control

Erosion controls are important to protect water quality, prevent excessive sedimentation in the wetlands, and protect the surrounding upland areas as revegetation progresses. Evaluation of potential erosion/sedimentation issues should be made periodically and after storm events to evaluate any potential problems and ensure the continued proper functioning of erosion control structures. Maintenance and repairs to erosion control materials and structures should be made as needed. The post-closure Erosion Control Management System for the Rocky Flats Site (under development) addresses erosion control inspection and maintenance activities at the Site.

1.5 References

USACOE, 1987. *Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1* (on-line edition), U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi, January.

Appendix A

Rocky Flats Wetland Impacts Spreadsheet

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USACOE and EPA Final Jurisdictional Wetland Impacts and Projected Mitigation Acreage Summary for RFETS
10/17/2005

Figure ID Number	Project Description	Agency	Estimated Temporary Acres Impacted	Estimated Permanent Acres Impacted	Estimated In-Situ Restored Acres	Estimated Mitigation Needed Beyond In-Situ	Estimated Additional Wetland Acres Created	Actual Temporary Acres Impacted *	Actual Permanent Acres Impacted +	Projected In-Situ Wetland Acres Restored @	Projected Additional Wetland Acres Created ^	Comments	GIS File Locations
1	East Shooting Range Project	EPA	0.022	0.000	0.022	0.000	0.000	0.017	0.000	0.017	0.000	Wetlands issues submitted under modifications to IM/IRA.	* @ = 05-0008: ESR wetland calcs.xls
2	Original Landfill Project	EPA	0.000	1.240	0.000	1.240	0.000	0.086	1.171	0.086	0.139	Wetland plan submitted with IM/IRA document.	* + @ ^ = 06-0002: OLF wetland impact calcs.xls
3	Present Landfill Project	EPA	3.045	0.010	3.045	0.010	0.000	0.800	2.131	0.800	0.000	Wetland plan submitted with IM/IRA. Because of outlet works height will now be the maximum height the water can reach, the wetland cannot re-establish to original levels. Therefore there is a loss because of less open water.	* + = 05-0030: PLF wetland impact calcs 062205.xls @ = 05-0041: KHDOE wetland acreage.xls
4	B-Pond Remediation Project	EPA	2.600	0.000	2.600	0.000	0.000	1.874	0.361	1.874	0.000	Wetlands addressed in RSOP notification. Wetland design has resulted in smaller emergent wetlands with less open water.	* + = 05-0031: Bponds wetland impact calcs.xls @ = 05-0041: KHDOE weltand acreages.xls
	EPA Subtotal		**5.667**	**1.250**	**5.667**	**1.250**	**0.000**	**2.777**	**3.663**	**2.777**	**0.139**		
5	C-1 Pond	USACOE	0.400	0.000	0.000	0.000	0.000	0.249	0.002	0.249	0.011		* + @ ^ = 05-0017: C-1 Pond wetland impact calcs.xls
6	C-2 Pond	USACOE	0.500	0.000	0.500	0.000	0.000	0.500	0.000	0.500	0.000	All disturbance on pond bottom, so assumed will return.	This value was an initial eyeball estimate because the area was all on the pond bottom and is assumed to return. No GIS data was used for the calcs.
7	Road North of B131	USACOE	0.050	0.000	0.050	0.000	0.030	0.039	0.010	0.039	0.036	Road area assumed to become wetland.	* + @ ^ = 06-0001: B131 wetland impact calcs.xls
8	Wetland West of Parking Area North of B771 (FC2/FC3 Confluence)	USACOE	0.000	0.120	0.000	0.120	1.310	0.180	0.000	0.180	0.106	Wetland area now larger than originally because final outlet is higher than previously.	* + @ ^ = 05-0027: fc2 3 wetland calcs.xls
9	Functional Channel 1 (includes North Access Road NW of B371)	USACOE	0.100	0.000	0.100	0.000	1.000	0.005	0.026	0.005	8.435	Road area assumed to become wetland. Also some wetland will be present in drainage to be created to the south. Assumed most of bottom of FC#1 will be wetland.	* + @ ^ = 06-0001: B371NAR wetland impact calcs.xls
10	Functional Channel 2	USACOE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.085	Acreage created includes only the FC#2 constructed wetland area. Willow area above it not included at this time.	^ = 05-0027: functional channel wetland creation calcs.xls
11	Functional Channel 3 (Area Near SW093)	USACOE	0.020	0.000	0.020	0.000	0.000	0.000	0.009	0.000	0.098	Acreage created includes only the FC#3 constructed wetland area. Small areas of soil covered riprap counted as wetland since they have water flowing through them or are saturated.	+ = 05-0027: fc3 wetland calcs.xls ^ = 05-0027: functional channel wetland creation calcs.xls
12	Functional Channel 4 (North Access Road Near WWTP (east and west of road), (B991 and Old Pidas Area)	USACOE	0.134	0.117	0.134	0.117	0.000	0.119	0.117	0.119	1.345	Acreage created includes only the FC#4 constructed wetland area. Areas above the created wetland that are not riprapped will have to wait and see if they become wetlands.	* + @ = 05-0003: fc4 wetland impact calcs.xls ^ = 05-0027: functional channel wetland creation calcs.xls
	USACOE Subtotal		**1.204**	**0.237**	**0.804**	**0.237**	**2.340**	**1.092**	**0.164**	**1.092**	**11.116**		
	Grand Total		**6.871**	**1.487**	**6.471**	**1.487**	**2.340**	**3.869**	**3.827**	**3.869**	**11.255**		

Does not include any impacts to wetlands associated with water depletion due to cessation of wastewater.

Off-Site Ratios will be 1:1 for the following reasons:
1. Off-site wetlands replace comparable wetlands impacted.
2. Off-site wetlands are close to impacted site (~1 1/2 miles).
3. Off-site wetlands are located in the same stream drainage.

Shaded projects have been GPS'ed after project completion and actual values are final as of October 17, 2005.
All values rounded at third decimal place. Values shown as 0.000 were beyond three decimal places.

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